

Application No. 09/751,090

IN THE CLAIMS:

1. (Currently Amended) A method for re-using an array of storage devices, comprising:

using firstly an array of storage devices arranged in a first RAID level configuration to conduct read/write operations under control of at least a first controller including providing ~~metadata~~ user data to each of said storage devices of said array; ascertaining that a failure has occurred;

discontinuing use of at least ~~two~~ one of said storage devices of said array related to conducting read/write operations based on the failure; and

using each storage device included in said array of storage devices after said discontinuing, wherein said using said array of storage devices after said discontinuing includes ~~updating said metadata to remove an indication that none of said at least two storage devices are accessible and to indicate that said at least two storage devices are accessible, wherein said updating said metadata is performed in response to said ascertaining that a failure has occurred, and wherein said updating said metadata is performed without interrupting power to the array accessing user data in said array of storage devices without restoring or reallocating any of said user data and without changing said first RAID level configuration to another RAID level configuration.~~

2. (Currently Amended) A method, as claimed in Claim 1, wherein: the failure is a ~~transient~~ temporary failure and is related to at least one of: an array enclosure; a back plane; a cable; said first controller; an interface; and

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software involved with operation of said first controller.

3. (Currently Amended) A method, as claimed in Claim 1, wherein:

said using said array of storage devices after said discontinuing includes making a determination related to being able to use after said ascertaining that a failure has occurred that each storage device in said array of storage devices including said at least two thereof can be used.

4. (Currently Amended) A method, as claimed in Claim 3, wherein:

said making said determination related to be able to use that each storage device in said array of storage devices including said at least two thereof can be used includes checking whether one or more of said storage devices is off-line.

5. (Currently Amended) A method, as claimed in Claim 1, further

comprising updating metadata stored on each of said storage devices, wherein:

said updating said metadata includes modifying metadata in a primary dead partition map on each of said storage devices, wherein each of said storage devices including said at least two storage devices is indicated as being valid.

6. (Currently Amended) A method, as claimed in Claim 1, further

comprising updating metadata stored on each of said storage devices, wherein:

said using said array of storage devices after said discontinuing includes issuing a trust array command to said first controller that causes said updating said metadata including writing all zeros in a primary dead partition map.

7. (Previously Presented) A method, as claimed in Claim 6, wherein:

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said using said array of storage devices after said discontinuing includes determining whether each of said storage devices of said array is accessible after said issuing of said trust array command.

8. Canceled.

9. (Currently Amended) A method, as claimed in Claim 7, further comprising:

allowing said user data and/or parity to be read by said first controller when more than one of said storage devices is off-line and reading said user data and/or parity from said storage devices of said array that are on-line.

10. (Previously Presented) A method, as claimed in Claim 1, wherein:
said using said array of storage devices after said discontinuing includes controlling re-use of said array based on one of: a user determination and an automatic determination independently of the user.

11. (Previously Presented) A method, as claimed in Claim 10, wherein:
said using said array of storage devices after said discontinuing includes generating a command by a host and transmitting said command to said first controller.

12. (Original) A method, as claimed in Claim 11, wherein:
said command is initiated manually by the user of said array.

13. (Currently Amended) A method, as claimed in Claim 1, further comprising:
~~not restoring and/or reconstructing user data and/or parity information.~~

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14. (Currently Amended) A system in which an array of storage devices are re-used after use of at least one storage device of the array is discontinued based on a fault, comprising:

an array of storage devices relative to which read and write data transfers are conducted;

a controller communicating with said array of storage devices for conducting read/write operations; and

a host communicating with said controller that makes requests related to data to be stored and data to be obtained from said array of storage devices;

wherein said host is used in generating a trust array command related to updating metadata, including changing said metadata from indicating that said one or more storage devices is inaccessible to indicating that said one or more storage devices is accessible, on each of said storage devices of said array after a fault occurs and after use of said array was discontinued due to the fault, but without restarting said array, and ~~wherein said trust array command is generated in response to detection of said fault wherein said array has a first array configuration including each of said storage devices prior to said fault, and wherein said array has said first array configuration including each of said storage devices after said fault, and wherein after said trust array command is generated user data stored on said storage devices is accessible in its original form and without restoration or recreation of said user data.~~

15. (Original) A system, as claimed in Claim 14, wherein:
said trust array command is generated in response to input from a user of the system.

16. (Original) A system, as claimed in Claim 14, wherein:

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said trust array command is generated independently of any reconstruction and/or restoration of said array.

17. (Original) A system, as claimed in Claim 14, wherein:

said host controls discontinuing use of said array of storage devices based on the fault and subsequently said host receives an input that is used in generating said trust array command.

18. (Previously Presented) A system, as claimed in Claim 14, wherein:

said trust array command modifies a primary dead partition map to indicate that all of said storage devices are valid.

19. (Original) A system, as claimed in Claim 14, wherein:

a determination is made by at least one of said controller and said host related to whether one or more of said storage devices is off-line before said trust array command is generated and a determination is made by at least one of said host and said controller related to whether each of said storage devices of said array is accessible after said trust array command is generated.

20. (Previously Presented) A system in which an array of storage devices are re-used after use of at least one storage device of the array is discontinued based on a fault, comprising:

an array of storage devices relative to which read and write data transfers are conducted;

a controller communicating with said array of storage devices for conducting read/write operations; and

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a host communicating with said controller that makes requests related to data to be stored and data to be obtained from said array of storage devices;

wherein said host is used in generating a trust array command related to updating metadata on each of said storage devices of said array after a fault occurs and after use of said array was discontinued due to the fault, said trust array command being generated in response to input from a user of the system.

21. (New) A method for controlling an array of storage devices, comprising:
providing an array of storage devices;
first storing data on said array of storage devices in accordance with a first RAID level;
detecting a fault with respect to at least one of said storage devices;
after said detecting a fault, receiving a trust array command; and
in response to said trust array command, at least one of storing data on and reading data from each storage device included in said array of storage devices, wherein said at least one of storing data to and reading data from each storage device is performed without restoring any of said data stored on said array of storage devices during said first storing data.

22. (New) The method of Claim 21, wherein said detecting a fault comprises detecting a fault with respect to more than one of said storage devices.

23. (New) The method of Claim 21, wherein said at least one of storing data on and reading data from each storage device in response to said trust array command comprises storing data on said array of storage devices in accordance with said first RAID level.

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24. (New) The method of Claim 21, wherein none of said storage devices included in said array of storage devices is replaced prior to said receiving a trust array command.